

REMARKS

Claims 15-53 have been cancelled without prejudice and claims 54-92 have been added such that claims 54-92 remain pending in this application. Applicant respectfully requests consideration of the pending claims in view of the above amendments and the following remarks.

Claims 15-53 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,343,324 to Hubis et al. (“Hubis”). Applicant submits that this rejection is moot in light of the cancellation of claims 15-53.

Applicant also submits that claims 54-85 recite features that are neither disclosed nor suggested in any way by Hubis. Independent claim 54 recites *[a] method for managing a storage area network (SAN), the method comprising:*

defining storage domains respectively having associated configurable storage management properties that are separate from individual physical capabilities of physical storage resources available through the SAN, wherein a first set of storage management properties is associated with a first storage domain and a second set of storage management properties is associated with a second storage domain, with the first set of storage management properties being different from the second set of storage management properties;
accommodating the creation of logical volumes configurable for presentation to hosts through the SAN; and
allocating the logical volumes to hosts in the context of the storage domains, wherein allocating a first logical volume to a first host in the context of the first storage domain entails the provision of storage resources according to the first set of storage management properties and allocating a second volume to a second host in the context of the second storage domain entails the provision of storage resources according to the second set of storage management properties.

The concept of assigning a logical volume to a host to accommodate presentation of the volume to the host without requiring the host to “know” the particulars of corresponding physical

disk drive(s) is well known. It is also known to provide a SAN or controller in conjunction with storage systems and servers that are connected via Fiber Channel equipment or the like to increase bandwidth and connectivity.

While the SAN and assignment of logical volumes are useful, there are various remaining storage management problems. For one, it is often difficult to manage the storage requirements of different groups. For example, an organization may have accounting department users and customer service department users, and may want to manage the storage properties of the accounting department users differently from the customer service department users, but still make use of the same pool of storage resources. Specifically, one group may merit high capacity, bandwidth, and/or integrity as compared to the other group.

Applicant's claimed invention accommodates improved management of storage resources in the SAN environment by providing storage domains that have configurable storage management properties. For a given SAN, an administrator may then easily define a number of different storage domains that correspond to yet are separate from the pool of available storage resources. Logical volumes are then allocated to hosts in the context of individual ones of the so-configured storage domains according to Applicant's claimed invention. As such, the allocation of a logical volume is subject to the configurable storage management properties of the particular storage domain in whose context the allocation is made.

Returning to the simple example introduced above, allocation of logical volumes for the accounting department may be in the context of a first storage domain, whereas allocation of logical volumes for the customer service department may be in the context of a second storage domain. Each of those storage domains has associated storage management properties that are configured as desired. Thus, even if the same volume is allocated to the two groups, the context

of allocation – the storage domain – provides the ability to configure and manage the properties of such storage. Additionally, the same pool of storage resources may be effectively managed by a SAN through the storage domain.

Hubis does not disclose or suggest such features. Hubis discloses a storage controller with mapping of physical storage devices to logical volumes. The references made by the Examiner ostensibly disclosing a storage domain (2: 47-56; 7:48-51; 8:43-58; 11:16; and 13:56-62) repeatedly refer to logical volumes and mapping of logical volumes to LUNs. As stated above, Applicant recognizes that the usage of logical volumes and the controller environment is known. However, Hubis makes no mention whatsoever of a storage domain, or storage domains having separately configurable storage management properties, or allocating logical volumes in the context of such storage domains. The storage domains as claimed by Applicant add a dimension to the management of storage and a flexibility that is in no way disclosed or suggested in any way by Hubis.

Accordingly, Applicant submits that Hubis fails to disclose (or even suggest) the features of claim 54, and respectfully requests reconsideration and allowance of that claim. For similar reasons, Applicant submits that Hubis fails to disclose or suggest the features recited in remaining independent claims 62, 70 and 78.

Applicant also submits that dependent claims 55-61, 63-69, 71-77 and 79-92 are distinct from Hubis for incorporating the features of their respective independent claims, and for the features separately recited therein.

Particularly, with regard to claims 56, 64, 72 and 80, Hubis in no way discloses or suggests allocating a common volume in the context of separate storage domains with respective

properties such that the allocation is subject to different storage management properties based upon that context.

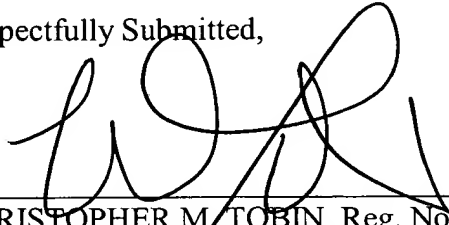
With regard to claims 57-61, 65-69, 73-77 and 81-85, Hubis fails to disclose or suggest providing configurable storage domain based properties including a guaranteed storage capacity, a guaranteed I/O properties that include an I/O bandwidth and/or an I/O operations, a guaranteed availability, a guaranteed performance, or a guaranteed integrity. Allowing a host system to determine what physical storage is available and the characteristics of that storage in accordance with the SCSI protocol as disclosed in the cited portion of Hubis (13:56-61) is well known and is not in any way similar to allocating logical volumes in the context of storage domains as claimed by Applicant.

Additionally, Hubis clearly fails to disclose or suggest having different classes of service for different hosts accessing the same volume within a SAN (claims 86, 88, 90 and 91), or softly configuring the storage management properties, which reflects the ease with which such properties may be altered without changing the connections to the physical devices of the SAN (claims 87, 89 and 92).

In view the foregoing amendments and remarks, Applicant respectfully submits that the claims in this application are in condition for allowance.

Should the Examiner believe that anything further is desirable to place the application in condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'CTOBIN', written over a horizontal line.

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CHRISTOPHER M. TOBIN, Reg. No. 40,290
COLLIER SHANNON SCOTT, PLLC
3050 K Street, N.W., Suite 400
Washington, D.C. 20007
(202) 342-8508